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ABSTRACT

Since the phonic abilities of high school shorthand teachers and students affect the students' mastery of dictation and transcription, a study was conducted (1) to develop a dictation/transcription learning cycle depicting the phoneme/grapheme correspondence in the two processes; (2) to determine the phonetic patterns of correspondence of the 5,170 most used business words in the two processes; and (3) to identify and analyze the phonic abilities of the teachers and students. The California Phonics Survey was administered to 341 shorthand students and twelve teachers in eleven Pittsburgh schools to ascertain the individual's ability to associate relationships between spoken sounds and written symbols. Based on the results (eighty-five percent of the students and thirty-three percent of the teachers showed serious phonic deficiencies), the need for studies in the following three areas was found: to determine if phonically disabled shorthand testees would benefit from developmental or remedial phonics instruction; to discover which of the currently used shorthand systems has the most phonically regular base and would be the easiest to learn; and to gather evidence concerning the concept of configuration and its relationship to dictation speed and visual discrimination. Also, several recommendations were proposed, including that a more structured language arts approach be incorporated into shorthand teaching methods and a more analytical, scientific approach be used towards coursework. (ELG)

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AN ANALYSIS OF THE PHONIC ABILITIES OF HIGH SCHOOL SHORTHAND TEACHERS AND STUDENTS AND OF THE PHONETIC PATTERNS OF CORRESPONDENCE OF THE MOST-USED BUSINESS WORDS

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INTRODUCTION

Shorthand is a multiple and complex language arts skill contributing much to our nation's economic growth and to increased job opportunities for women. Approximately ninety per cent of the nation's high schools offer Gregg shorthand courses to their students.[1] Every year 800,000 - 1,000,000 students enroll in these courses,[2] and each year a higher percentage of these students fail shorthand than any other course offered in public secondary schools.[3] Some authorities have estimated this failure rate to be as high as fifty per cent. After one year of instruction, only twenty per cent of the shorthand students can take dictation at sixty words a minute[4] and after two years of instruction only fifty per cent of the students can take dictation at eighty words a minute.[5]

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[1]Allien R. Russon, Methods of Teaching Shorthand, Monograph 119 (Cincinnati: South-Western Publishing Company, 1968), p. 3.

[2]Ibid, p. 4.

[3]William Selden, "Guidance for Business Education," The Vocational Guidance Quarterly, XII (Winter, 1963-1964), p. 108.

[4]Ruth I. Anderson, "Significant Implications of Research in Shorthand and Transcription," Secretarial Education with a Future, Nineteenth Yearbook of the Eastern Business Teachers Association and National Business Teachers Association (Somerville, New Jersey: E.B.T.A. and N.B.T.A., 1962), p. 52.

[5]Inez Frink, "A Comprehensive Analysis and Synthesis of Research Pertaining to Shorthand and Transcription" (Doctoral dissertation, Indiana University, 1962).

Dictation and transcription require an integration of listening, writing, reading, and typing skills in order to achieve mastery. These language skills are also complicated by the fact that shorthand is composed of a phoneme/grapheme (sound/symbol) base which suggests that an individual also needs a knowledge of phonics--the ability to associate letter-sound relationships--an element overlooked by most educators and researchers.

Although a one-to-one relationship is maintained between spoken sounds and written symbols regardless of spelling irregularities, the sounds of individual letters in written words do not maintain this relationship. Therefore, the phonic abilities of shorthand teachers and students and the phonetic patterns of correspondence of the words that must be dictated and transcribed require closer observation.

STATEMENT OF THE PROBLEM

This problem was an analysis of the phonic abilities required of high school shorthand teachers and students to achieve dictation and transcription mastery.

PURPOSES OF THE STUDY

The purposes of this study were:

1. to develop a dictation/transcription learning cycle depicting the phoneme/grapheme relationships in both processes.

2. to enumerate, categorize, and analyze the phonic abilities of high school shorthand teachers and students.

3. to determine the phonetic patterns of correspondence of the 5,170 most-used business words in both the dictation and the transcription processes.

BACKGROUND OF THE STUDY

Research data suggests that underachievement in shorthand may be due to a student's language deficiencies.[6] English errors account for over 50 per cent of transcription errors, 25 per cent of content errors, 10 per cent of typographical errors, and 10 per cent of letter mechanics errors.[7] An analysis of 200 stenographic tests revealed that the three basic incompetencies of the testees were misreading of shorthand notes, misspelling of words, and misinterpreting of sentences.[8] Current research indicates that a significant positive relationship exists between a student's mastery of shorthand vocabulary and ultimate achievement in shorthand dictation.[9] A closer analysis of these language errors suggests that phonic deficiencies may be contaminating the impressive and expressive channels of communication in hearing, writing, reading, and typing the dictated words of office correspondence.

Gregg shorthand symbol construction is based upon an ellipse and a line and deviations thereof.[10] Shorthand sound construction is based upon phonics and the phoneme/grapheme relationships and deviations thereof.[11] The integration of this sound/symbol base formulates the dictation/transcription learning process--the tasks of which are multiple and complex.

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[6]Marion M. Lamb, Your First Year of Teaching Shorthand and Transcription (Cincinnati: South-Western Publishing Company, 1961), p. 107.

[7]Ibid, p. 279.

[8]Ibid, p. 33.

[9]Joe M. Pullis, "Milking Some Sacred Cows of Shorthand," Reprint from Century 21 Reporter (Cincinnati: South-Western Publishing Company, 1974), pp. 3-4.

[10]John Robert Gregg, Gregg Shorthand, (New York: The Gregg Publishing Company, 1929), p. 1.

A THEORITICAL CONSTRUCT

The following theory has been developed by this writer to establish the tasks involved in the shorthand dictation/transcription learning process which when combined formulate the shorthand learning cycle.

The Dictation Process

Language perception is the most important auditory task of a human being.[11] Hearing plays a special role in language development. Operating in the affective domain, the transcriber hears the words of office correspondence being dictated and receives audible stimuli in the form of sound waves.[12] These waves are intensified thirty times within the ear or receptor and are transformed into sound impulses by the auditory nerve which transmits them to the temporal lobe of the brain.

The sound impulses are then transmitted to two areas of the cerebral cortex for language perception as the transcriber begins to operate in the cognitive domain.[13] These impulses are first recognized as language patterns and formulated into the linguistic message by Wernicke's Area which lies in a posterior and superior portion of the temporal lobe adjacent to the cortical region for hearing. From this area the impulses are forwarded to Broca's Area which lies in front of the cortical representation of the muscles of speech and are recorded into their articulated form and grammatical structure.[14]

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[11]Peter Marker, "Speech Development and Bird Song: Are There Any Parellels?" Communication, Language, and Meaning, ed. by George Miller (New York: Basic Books, Inc., 1973), p. 75.

[12]David R. Karthwohl, Benjamin S. Bloom, and Bertram B. Masia, Taxonomy of Educational Objectives, Handbook II: Affective Domain (New York: David McKay Company, Inc., 1956), p. 95.

[13]Edward Bernard Fry, "Hearing," Reading Instructional for Classroom and Clinic (New York: McGraw-Hill Book Company, 1972), p. 306.

[14]Benjamin S. Bloom, Ed., et al, Taxonomy of Educational Objectives, Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956), pp. 62-88.

Once the message is perceived it must also be transliterated into shorthand symbols enabling the transcriber to construct the dictated message.

Finally the transcriber operates in the psychomotor domain as the symbol impulses are transmitted to the sensory-motor coordination area of the brain which signals the 29 bones, 25 joints, and 30 muscles of the arm, hand, and wrist to engage in extension and flexion so that the shorthand message may be written,[15] thereby completing the dictation process.

The Transcription Process

Operating once again in the affective domain, the transcriber receives sounds in the form of visual stimuli. These light waves which are transformed into light impulses by the optic nerve located behind the eye are transmitted to the visual center of the brain where they are perceived.[16]

The cognitive domain is once again in operation as the transcriber begins to read the shorthand symbols that have been recorded and to transliterate the message that has been received.[17] In the dictation process the message was transliterated from an audible sound to a visual symbol. Now in the transcription process this procedure must be reversed to transliteration of a visual symbol into an audible sound so that the transcriber can mentally perceive the longhand words that these sounds represent.

Finally operating in the psychomotor domain, the transcriber's sensory-motor area of the brain is activated and signals are again sent to the arm,

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[15]Clem W. Thompson, Manual of Structural Kinesiology (St. Louis: The C. V. Mosby Company, 1969), p. 41.

[16]Clifford T. Morgan, "Visual Physiology," Physiological Psychology (New York: McGraw-Hill Book Company, Inc., 1943), pp. 161-166.

[17]Bloom, op. cit., pp. 62-68.

hand and wrist this time signaling the typing of the longhand message, thus completing the transcription process.[18]

Figure 1 on the next page graphically depicts the Shorthand Dictation/Transcription Learning Process as previously described. This counterclockwise cycle represents the multiple stimulus-response bonds of the psychophysic processes of listening to sounds, transliterating those sounds into shorthand symbols representing those sounds, writing these shorthand symbols, transliterating these shorthand symbols back into the sounds that they represent, and then typing those sounds as longhand symbols. Both the dictation and the transcription tasks involved in this cycle require the learner to rely heavily on previously learned phonic skills. Both the dictation and the transcription tasks necessitate the use of all three domains for receiving, perceiving, and affecting the stimulus-response bonds required for recording and transcribing phonological information.

Although phonic skill plays a critical role in the dictation/transcription process, few studies have been completed in this area of shorthand curriculum.

PROCEDURES FOR COLLECTING AND TREATING DATA

Since shorthand is classified in the Dictionary of Occupational Titles as a communications service, a communications interaction model was chosen for this multi-layered descriptive study--the initiator of the interaction being the teacher; the receptor of the interaction being the student; and the understandable base being phonics.[19]

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[18]Thompson, op. cit., p. 41.

[19]Charles J. Fillmore, A Grammarian Looks to Sociolinguistics, Report of the Twenty-Third Annual Round Table Meeting on Linguistics and Language Studies (Washington D. C.: Georgetown University Press, 1973), p. 277.

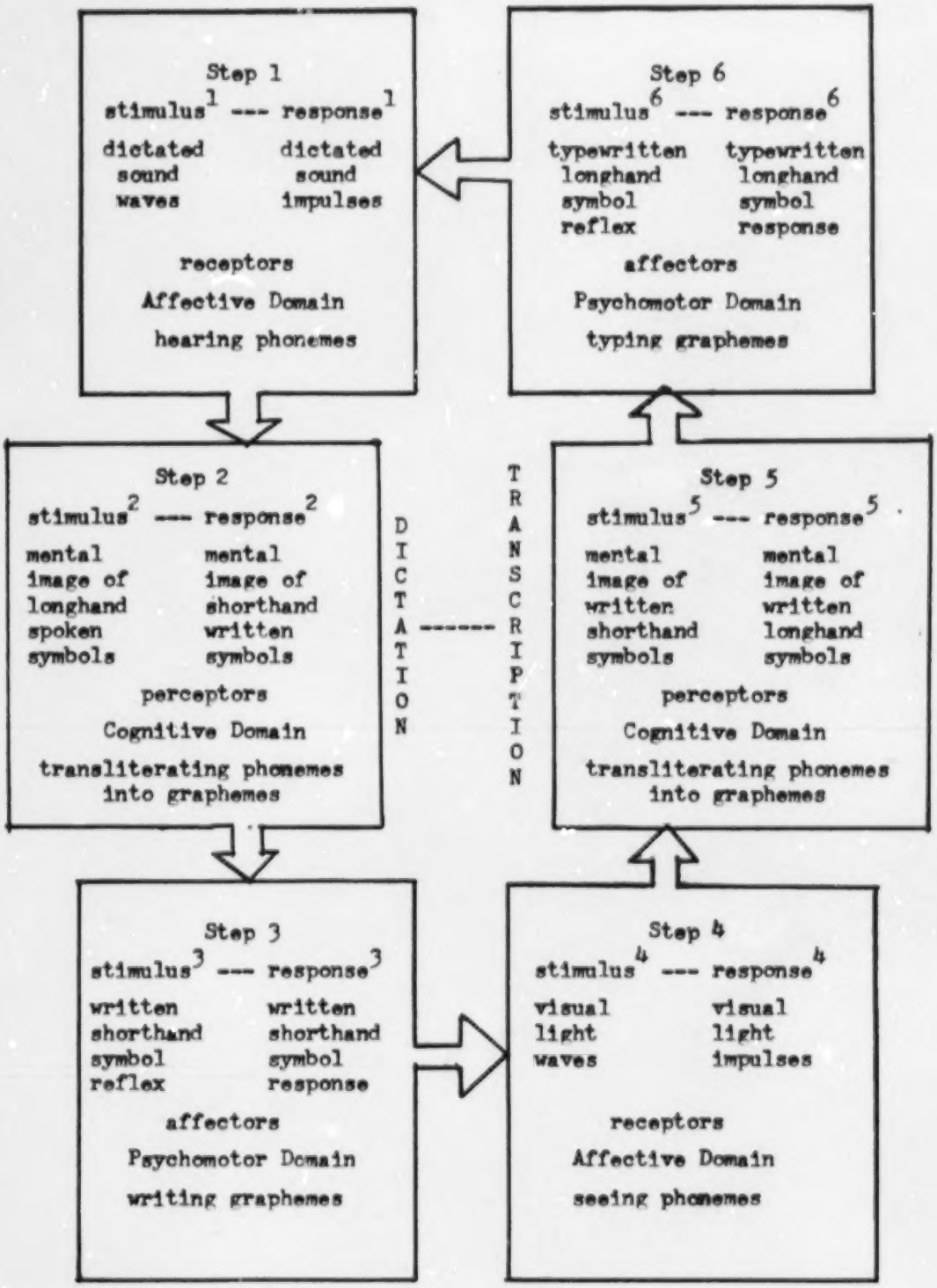

Fig. 1.--The Shorthand Dictation/Transcription Learning Process

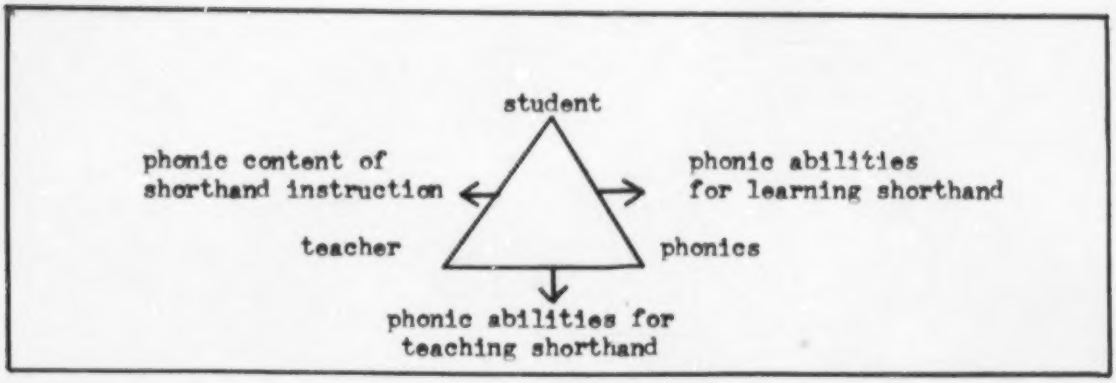

Fig. 2.--The Research Model

The procedure used to gather the data was survey and analysis. The California Phonics Survey, Form 1, a group diagnostic instrument (Brown and Cottrell) was administered to 341 Shorthand 1 and 2 students and 12 Shorthand 1 and 2 teachers in 11 City of Pittsburgh (Pa.) Public High Schools. This 75-item error analysis determined the individual's ability to associate relationships between spoken sounds (cassette tape) and written symbols (answer sheet).[20]

The 5,170 most-used business words comprising 96 per cent of office correspondence were analyzed by their phoneme/grapheme correspondence utilizing the 43 sounds of the English language with their 90 common spellings.

The above analyses determined phoneme/grapheme associations as displayed by the teachers, the students, and the materials. Data was then computerized and defined by relative and absolute frequency tables as well as raw-score cutting points. Comparative tables were constructed by t-tests and multivariate analysis of variances.

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[20]Grace M. Brown and Alice B. Cottrell, California Phonics Survey, Form 1 (California: California Test Bureau, 1963).

PRESENTATION AND ANALYSIS OF DATA

Student and Teacher Data

The following relative frequencies designated the testees phonic levels:

Levels	Phonic Deficiency	Students N=341	Teachers N=12
4	little or none	15.2%	66.7%
3	some	55.4%	33.3%
2	serious	20.8%	00.0%
1	gross	8.6%	00.0%

Approximately 85 per cent of the students and 33 per cent of the teachers tested displayed some, serious or gross phonic deficiencies. Students and teachers that tested into different phonic levels displayed different types of error frequencies.

The table on the next page depicts the rank order of the types of phonic errors made by the testees. Shorthand 1 and Shorthand 2 students had the same rank order for every error category except the second year students had less errors in each category. Teachers who taught Shorthand 1 only had the lowest mean phonic score; those that taught Shorthand 2 only achieved a slightly higher mean score while teachers who taught a combination of both shorthand courses achieved the highest mean scores. When error categories were compared to race, black and white students differed in their rank order of error categories. Teachers could not be compared by race because of an insufficient sample of black teachers.

Word Data

The 5,170 words chosen for analysis represent 96 per cent of the most-used words of office dictation and transcription. This vocabulary list was analyzed for its patterns of phonetic correspondence by a two-way relationship between the Gregg Diamond Jubilee Series shorthand symbol (the system

RANK ORDER OF PHONIC ERRORS

Error Category	Students N=341	Teachers N=12
CONFIGURATION: shape, e. g. psychic substituted for physic.	88.3%	41.7%
LONG/SHORT VOWEL CONFUSION: cannot discriminate long and short vowel sounds, e. g. tot mistaken for tote.	85.0%	66.7%
UNCLASSIFIED ERRORS: mistakes exclusive of phonic errors.	83.9%	41.7%
RIGIDITY: inflexibility in disassociating auditory from visual association in word perception, e. g. the spoken sound wrooph cannot be perceived to be the written symbol roof.	75.1%	83.3%
CONSONANT BLEND & DIGRAPH CONFUSION: Consonant Blend - combination of letters exclusive of a, e, i, o, and u representing more than one sound, e. g. black and pray; Diagraph - combination of letters representing one sound, e. g. read and graphic.	69.8%	25.0%
OTHER VOWEL CONFUSION: other vowel sounds not included above, e. g. toy.	67.2%	25.0%
CONSONANT/VOWEL REVERSALS: transposition of letters, e. g. salg mistaken for slag.	48.1%	16.7%
ENDINGS: suffixes, e. g. loaded and riding.	42.8%	00.0%
NEGATIVES, OPPOSITES, AND SIGHT WORDS: Negative - in a contrary position or direction, e. g. didn't substituted for did; Opposite - in a contrary position or direction, e. g. determined substituted for undetermined; Sight Words - word perception upon visual presentation.	21.4%	00.0%

Testing Instrument: California Phonics Survey, Form 1

being utilized by the testees) and its dictated phonemes and its transcribed graphemes. Words were classified as having direct or non-direct phonetic patterns of correspondence in both the dictation and the transcription processes. For example, the word m a d e was classified as phonically regular because the phonemes m a d have direct correspondence to the recorded shorthand graphemes m a d and with the transcribed longhand graphemes m a d e even though the e remains silent according to the 43 sounds and their 90 common spellings in the English language. The word m a t e r i a l, on the other hand, was classified as phonically irregular because the phonemes m e t ə r i e l have a non-direct correspondence with the recorded shorthand graphemes m a t e r l and with the transcribed longhand graphemes m a t e r i a l.

The business vocabulary analyzed was found to contain the following phonetic patterns of correspondence:

PHONETIC PATTERNS OF CORRESPONDENCE
OF THE 5,170 MOST-USED
BUSINESS WORDS

Phonetice Patterns of Correspondence	Relative Frequency
phonically irregular in both dictation and transcription	60%
phonically regular in both dictation and transcription	24%
phonically regular in dictation but phonically irregular in transcription	16%

In dictation 60 per cent of the words were found to be phonically irregular while in transcription 76 per cent were phonically irregular. The majority of these words were classified as irregular because they

contained missing vowels or consonants, sight elements or sight words, or r controlled elements with missing vowels or double consonants.

CONCLUSIONS

The structure and process of the communication skills required for shorthand mastery are multiple and complex. Phoneme/grapheme association, transliteration, and production are the basic elements comprising the input, thruput, and output sub-systems of the dictation/transcription learning cycle.

Shorthand has had the reputation for being the business course with the highest degree of failure and dropout rate offered on the high school level. One explanation for this may be poor communication skills--listening, speaking, reading and writing especially of phonics. Approximately four out of every five of the shorthand students tested and one out of every three of the shorthand teachers tested lack sufficient phonic ability needed to dictate or transcribe the words of office correspondence. Compounded by the fact that 3/5 of the words analyzed in dictation and 3/4 of the words in transcription lack direct phoneme/grapheme correspondence, the production of mailable transcripts becomes a formible task.

RECOMMENDATIONS

1. In the past many decisions affecting shorthand curriculum have been based on subjective opinion rather than on scientific fact, therefore a more analytical approach to coursework is needed in order that learning may be made intentional rather than incidental.

2. Experimental research is needed to determine if indeed phonically disabled shorthand testees would benefit from developmental or remedial phonics instruction.

3. Research is required to determine which of the currently used shorthand systems has the most phonically regular base as this system would in all

probability be the easiest system to learn.

4. Since slow learners learn better with structured methods emphasizing letters and sounds rather than techniques utilizing whole words and meanings, a more structured language arts approach needs to be incorporated into the methods of teaching shorthand theory.

5. More evidence is needed concerning the concept of configuration and its relationship to dictation speed and visual discrimination. Since this concept was the most missed error category, lineation, direction, proportion, and connection clues need to be incorporated not only into textbook formats but also into chalkboard presentations especially in the initial learning stages of theory persentation.

6. Since the association, transliteration, and production of office correspondence requires a positive phoneme/grapheme relationship both in the dictation as well as in the transcription process, communication clues should also be included in the format for theory presentation, e. g. for the presentation of long a the format should include the phoneme ā; the shorthand grapheme long a -*O*; as well as the longhand grapheme for long a - ā, āi, ā e, and āy (table, rain, day, lake).

7. Since shorthand is classified as a communication skill, a language arts method of presentation should be used in transliteration drills not only from shorthand grapheme to longhand grapheme but also from longhand grapheme to shorthand grapheme under timed conditions to increase problem-solving skills under stress.

8. The following definition of shorthand may be derived from the Shorthand Dictation/Transcription Learning Process: a two-way phoneme/grapheme association for the production of mailable copy. This phoneme/grapheme association may also be used as a difficulty index for word construction.

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